

STUDIES IN BIGNONIACEAE 48:
NEW SOUTH AMERICAN SPECIES OF BIGNONIACEAE

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Six new species of Bignoniaceae are described here -- Adenocalymma chocoensis A. Gentry, Amphilophium perbracteatum A. Gentry, Anemopaegma ionanthum A. Gentry, Jacaranda campinae A. Gentry and Morawetz, J. grandifoliata A. Gentry, and J. morii A. Gentry. Four of these are from Brazil, one from French Guiana, and one from the Colombia-Panama border region.

ADENOCALYMMA CHOCOENSIS A. Gentry, sp. nov.

Frutex scandens, ramulis teretibus, lenticellis elevatis valde ornatis; pseudostipulae subfoliaceae. Folia 2-3-foliolata, interdum cirrho simplici, foliolis anguste oblongo-ovatis vel ellipticis, fere glabris. Inflorescentia floribus in racemo axillari dispositis, interdum ramis racemosis basalibus. Calyx campanulatus, late 5-dentatus; corolla aurata, tubulo-campanulata, extus minute puberula. Capsula ignota.

Liana or sometimes a suberect treelet, branchlets terete, sparsely and minutely puberulous when young, soon glabrescent, strongly raised lenticellate, the round dark-drying lenticels contrasting with the pale gray branchlets; pseudostipules obovate, subfoliaceous, ca. 0.5 cm long. Leaves 3-foliolate or 2-foliolate with an unbranched terminal tendril or tendril scar, the leaflets narrowly oblong-ovate to elliptic, acuminate, rounded to broadly cuneate at base, 6-24 cm long, 2.5-9 cm wide, drying gray green, the venation prominulously raised above and below, mostly glabrous, with a few minute trichomes scattered along main veins above and usually below; petiole 2-5 cm long, glabrescent, dark-lenticellate, the petiolules 0.8-3 cm long. Inflorescence an axillary raceme or with 2-3 racemose branches, finely puberulous with scurfy tannish trichomes, the bracts and bracteoles minute and early caducous. Flowers with the calyx campanulate, shallowly and broadly 5-dentate, 6-8 mm long, 6-8 mm wide, densely minutely puberulous in part with thick-stellate

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trichomes, drying brownish with conspicuously raised dark glands near margin; corolla yellow, tubular-campanulate above the 1.5-2 cm long basal tube, 5-8 cm long, 1.5-2 cm wide at mouth of tube, the tube 4-5.5 cm long, the lobes 1-2 cm long, the tube minutely scurfy puberulous outside, the lobes sparsely glandular lepidote, pubescent with gland-tipped trichomes inside at and below stamen insertion; stamens didynamous, the anthers divaricate, 4 mm long; pistil with the ovary tapered-cylindrical, 3 mm long, 1 mm wide, glabrous except for a few lepidote scales near base, subtended by a pulvinate-cylindric nectariferous disk 1 mm long and 2 mm wide. Fruit unknown.

Type: PANAMA: Darién: Ensenada del Guayabo, 16-19 km SE of Jaqué, liana, corolla deep yellow, 29 Apr 1980, N. Garwood 972 (holotype, MO; isotypes to be distributed).

Restricted to the lowland tropical wet forest area of northern Choco Department, Colombia and the adjacent Darien of Panama.

Additional collection examined: COLOMBIA: Chocó: Upper Río Truandó, La Teresita INDERENA camp, alt. ca. 100 m, 18 Jan 1974, Gentry 9320 (COL, MO).

This species is vegetatively similar to Adenocalymma arthropetiolum A. Gentry, also endemic to eastern Panama and northern Choco. That species, which differs most obviously in branchlets lacking the prominently raised dark lenticels of A. chocoensis, occurs in moist rather than wet forest habitats. Adenocalymma chocoensis is unusual in its genus in lacking conspicuous bracts and bracteoles and in its rather short broadly campanulate calyces.

AMPHILOPHIUM PERBRACTEATUM A. Gentry, sp. nov.

Frutex scandens, ramulis hexagonis, trichomatis dendroideis puberulis. Folia 2-foliolata, interdum cirrho trifurcato, foliolis ellipticis, trichomatis dendroideis dense puberulis, Inflorescentia floribus in panicula fere subspicata dispositis, bracteis foliaceis ornata. Calyx campanulatus, limbo membranaceo submarginali; corolla purpurea, valde bilabiata; ovarium ellipsoideum villosum. Capsula ignota.

Liana, branchlets hexagonal with detachable ribs, dendroid pubescent, without pseudostipules. Leaves 2-foliolate, usually with a trifid tendril, the leaflets elliptic, rounded to obtuse at base and apex, 2-8 cm long, 1.5-4 cm wide, subcoriaceous, densely dendroid pubescent above and below, discolorous, drying gray above, tannish olive below, petiole 0.7-2.5 cm long, petiolules 0.3-1 cm long, dendroid pubescent. Inflorescence a very narrow almost subspicate panicle, dendroid puberulous, the bracts foliaceous, narrowly elliptic, (1-)1.5-2.5 cm long, (0.4-)0.5-1 cm wide, dendroid puberulous. Flowers with the calyx campanulate with a broad thin frilly limb 15 mm long (without the ca. 1 cm long submarginally inserted outer limb), 8-9 mm across without limb (ca. 20 mm across including limb), densely dendroid pubescent, also with stalked-lepidote glands on the outer lobes; corolla purple, (apparently: partially destroyed in available specimens) tubular, bilabiate, 4 cm long, ca. 1 cm wide, the upper 2 lobes thick, fused, the lower 3 ca. 10 mm long, probably loosely fused at anthesis, essentially glabrous outside; anther thecae subparallel, 3 mm long; ovary ellipsoid, 2 mm long, 2-2.5 mm wide, densely villous with simple trichomes; disk patelliform-pulvinate, 1 mm long, 3-4 mm wide. Fruit unknown.

Type: BRAZIL: Bahia: Serra Geral de Caititê 9 km S of Brejinhos das Ametistas, 42°27'W, 14°19'S, alt. 900 m, tall deciduous forest, 12 Apr 1980, R. Harley 21286 (holotype, CEPEC; isotypes, K, MO).

This new species is strikingly similar to Haplolophium bracteatum Cham., especially in its foliaceous inflorescence bracts. Although it is clearly assignable to Amphilophium on account of the bilabiate corolla, the striking similarities to Haplolophium emphasize the perhaps too-close relationship between them. In Amphilophium it is closest to the very rare A. blanchetii (DC.) Bur. and K. Schum., which is very similar vegetatively but lacks the conspicuous bracts of the new species; significantly, A. blanchetii was originally described in Haplolophium.

ANEMOPAEGMA IONANTHUM A. Gentry, sp. nov.

Frutex scandens, ramulis teretibus vel subtetragonis. Folia 2-foliolata, foliolis ovatis vel oblongo-ovatis, coriaceis, glabris. Inflorescentia floribus in racemo dispositis. Calyx cupulatus, truncatus; corolla lobis purpureis, tubulo-

campanulata, extus minute puberula; ovarium stipitatum, subglobosum, lepidotum. Capsula ignota.

Liana; branchlets terete to subtetragonal, without lenticels, minutely puberulous and lepidote, finely longitudinally striate. Leaves 2-foliolate, sometimes with a simple or trifid tendril; leaflets ovate to oblong ovate, obtuse except for a 1-2 mm long apicule, rounded or truncate at base, 5.5-13.5 cm long, 2.5-9 cm wide, coriaceous, usually completely glabrous except for inconspicuous lepidote scales or pitting, occasionally with a few minute trichomes at base of midvein above, the venation inconspicuously impressed above, virtually plane below with even the midvein barely prominent, drying olive to grayish olive above and olive below; petiole 1.5-5 cm long, the petiolules 0.3-1 cm long, inconspicuously and very minutely puberulous. Inflorescence basically racemose, reduced to 2 or 3 flowers, axillary or terminal on young branches, puberulous, with inconspicuous short thick bracteoles subtending the pedicels. Flowers with the calyx cup-shaped, truncate, 3-5 mm long, 4-7 mm wide, inconspicuously lepidote and minutely puberulous, with conspicuous clusters of plate-shaped glands descending from margin; corolla with the tube yellow and the lobes deep purple, tubular-campanulate above a narrow basal tube, 4-5 cm long, 1-1.5 cm wide at mouth of tube, the lobes 0.5-1 cm long, the tube 3.5-4.5 cm long, the narrowed basal portion 1.5-2 cm long and 3-6 mm wide, minutely puberulous outside, the lobes with conspicuous plate-shaped glands toward base, inside glabrous except at level of stamen insertion; stamens didynamous, inserted ca. 15 mm from base of tube, the thecae divergent, 4 mm long, the filaments 1.5-2 cm long; pistil ca. 3 cm long, the ovary stipitate, subglobose, 2 mm long, 2 mm wide, lepidote; disk annular-pulvinate with a tapered neck, the base 1 mm long and 3 mm wide, longitudinally grooved, the neck 1 mm long. Fruit unknown.

Type: FRENCH GUIANA: Massif des Emerillons, Nord, 300 m, 20 Sep 1980, Cremers 6737 (holotype, MO; isotypes, CAY, MO).

Additional collection examined: BRAZIL: AMAPA: Rio Oiapoque, lower and middle slopes of Mt. Tipac, 0-200 m, 3°36'N, 51°19'W, 13 Oct 1960, Irwin 48697 (MO, NY).

One other sterile collection is probably referable to this species. Gentry 13004 from km. 60 on the Manaus-Caracai road (BR174) in Amazonas, Brazil, has leaves very like

those of A. ionanthum but somewhat narrower and uniformly simple tendrils. That collection is not included in the above description.

Generic placement of this plant is somewhat problematic. The ovary of the new species suggests Anemopaegma, and there is a strong overall similarity to A. robustum in features such as the strongly glandular calyx, prominent glands at the base of the corolla lobes, and puberulous corolla tube. However, the purple flower color is completely out of place in Anemopaegma which otherwise has yellow or cream corollas. The species differs from A. robustum in the reduced inflorescence, flower color, and smaller leaves with the secondary veins not prominent below. The corolla is shaped like that of hummingbird-pollinated Martinella obovata (HBK.) Bur. and K. Schum., also similarly colored, suggesting that A. ionanthum may be a hummingbird-pollinated species of Anemopaegma.

JACARANDA CAMPINAE A. Gentry and W. Morawetz, sp. nov.

Frutex 1-2 m altus. Folia pinnata, 7-9-foliolata, rhachi alata, foliolis ellipticis vel anguste ovatis, glabris. Inflorescentia floribus in racemo axillari pauciflori dispositis. Calyx campanulatus, 5-dentatus; corolla lilacina, tubulo-campanulata, extus minute puberula; stamina didynamia thecis duabus; ovarium glabrum. Capsula oblongo-elliptica, valde complanata, 3-4 cm longa, 2.5-3 cm lata.

Shrub 1-2 m tall, the branchlets subterete to subtetragonal, glabrous, lenticellate, rather prominently longitudinally ridged. Leaves simply pinnate, 7-9-foliolate, the petiole and rachis strongly winged, the wing to 1 cm wide, the leaflets elliptic to narrowly ovate, 2-8 cm long, 1.5-3.8 cm wide, acute to obtuse at apex, rounded to broadly cuneate at base, coriaceous, completely glabrous except for conspicuous impressed lepidote glands below, drying dark brown above, brownish tan below, the ultimate venation intricately prominulous above and below. Inflorescence a contracted few-flowered axillary raceme, sometimes reduced to one or two flowers, glabrous to minutely and inconspicuously puberulous, slender and rather conspicuously jointed from the raised pedicel attachments. Flowers with the calyx campanulate, 4-5 mm long, ca. 3 mm wide, shallowly 5-dentate, glabrous except the ciliate margin and a few appressed hairs

on inside of lobes; corolla lilac to pink-violet, tubular-campanulate above the narrowly tubular base, finely puberulous outside especially toward apex, with a few stalked glands near base, the lobes puberulous inside, ca. 3 cm long, ca. 7 mm wide at mouth of tube, the tube 2.5 cm long, the lobes ca. 3 mm long, the stamens didynamous, 2-thecate, the thecae divaricate, ca. 1 mm long, the staminode subexserted, capitate, the apex densely glandular-villous; ovary flattened ovoid, glabrous, ca. 1 mm long and wide, the annular disk 0.5 mm long, ca. 1 mm wide. Fruit oblong-elliptic, rounded to truncate at base and apex, thin, flattened, 3-4 cm long, 2.5-3 cm wide; seeds thin, bialate, ca. 1 cm long by 2-2.5 cm wide, the brownish-veined subhyaline wings indistinctly demarcated from seed body.

Type: BRAZIL: Amazonas: TransAmazon Highway 53 km W of Aripuanã River; campina region, 29 June 1979, C. E. Calderon, O. P. Monteiro and J. Guedes 2719 (holotype, MO; isotypes, US, INPA).

Endemic to white sand campinas of the Rio Madeira drainage in the border area between Amazonas, Rondonia, and Mato Grosso States in southern Amazonian Brazil.

Additional collections examined: BRAZIL: Amazonas: Type locality, 27 June 1979, C. E. Calderon, O. P. Monteiro, and J. Guedes 2683 (MO, US). Rondonia ("Mato Grosso"): Tabajaza, upper Machado River, Nov-Dec 1931, B. A. Krukoff 1482 (BM, G, K, NY, U).

This distinctive species has been known for 50 years from a single fruiting collection. Sandwith (Kew Bull. 1962: 459-466) suggested that this specimen might be referable to J. egleri Sandw. and Morawetz (Morphologisch-ökologische Differenzierung, Biologie, Systematik und Evolution der Neotropischen Gattung Jacaranda (Bignoniaceae), PhD Thesis, University of Vienna, 1980), refraining from describing it in the absence of flowers, discussed and illustrated it as J. cf. egleri. Nevertheless, even on purely vegetative grounds, J. campinae seems well differentiated from J. egleri by its much larger leaves. The two additional flowering collections now available prove that the two species are amply distinct. Besides its much larger leaves and leaflets, J. campinae differs from J. egleri especially in having reduced axillary inflorescences, more puberulous corollas, and larger (2-3.5 x 1.5-2 cm in J. egleri) more oblong fruits. Jacaranda egleri is a tiny subshrub 0.25 to 0.5 m

tall and is known from much farther east in the Rio Cururú area of the Tapajos drainage system in southern Para. The only other apparent relatives of J. campinae are J. bullata A. Gentry of the upper Rio Negro and J. racemosa Cham. Both have terminal inflorescences and relatively small elliptic fruits similar to those of J. egleri; the bullate leaflets of the former and the very narrow small leaflets of the latter are also strikingly different from those of J. campinae.

JACARANDA GRANDIFOLIOLATA A. Gentry, sp. nov.

Frutex 0.5-3 m altus. Folia pinnata, 3-5-foliolata. (juvenalia interdum pro parte bipinnata), foliolis ellipticis vel obovatis, coriaceis, 3-13 cm longis, 1.8-7 cm latis, glabris. Inflorescentia floribus in panícula parva glabrata dispositis. Calyx cupulatus, 5-dentatus; corolla purpurea, tubulo-campanulata, extus parce puberula; stamina didynamia thecis duabus. Capsula ignota.

Shrub or treelet 0.5-3 m tall. Branchlets subterete to subtetragonal, glabrous, finely ridged. Leaves simply pinnate (in part bipinnate in juveniles), 3-5-foliolate (to ca. 9-foliolate in bipinnate juveniles), the rachis subulate; leaflets (except terminal) subsessile or with 1-2 mm long petiolules, elliptic to obovate, obtuse at apex, cuneate to obtuse at base, 3-13 cm long, (1-)1.8-7 cm wide, entire, coriaceous, minutely glandular lepidote above and below, otherwise completely glabrous, the venation slightly raised above and below, drying dark above, olive brown with reddish brown midvein below. Inflorescence terminal and axillary, paniculate, with a well-developed main rachis and few-flowered lateral branches, rather small (less than 12 cm long), glabrous or very sparsely and minutely puberulous. Flowers with the calyx cupular, evenly 5-dentate, 3-4 mm long, 3-4 mm wide, ciliate, otherwise glabrous or with scattered minute trichomes, a few plate-shaped glands often present; corolla purple, tubular-campanulate, 3-4.5 cm long, 0.7-1.2 cm wide at mouth of tube, the tube 2.4-4 cm long, the lobes ca. 0.5 cm long, sparsely puberulous inside with longer trichomes on lobes and at level of stamen insertion; stamens didynamous, the anthers 2-thecate, the thecae divaricate, 2 mm long, the staminode ca. 3.5 cm long, glandular pubescent at middle and tip, the apex undivided; pistil 2.9 cm long, the ovary oblong, 1.5 mm long, 1.5 mm wide, glabrous; disk annular-pulvinate, 1 mm long, 3 mm wide. Fruit unknown.

Type: BRAZIL: Bahia: 24 km SW of Belmonte on road to Itapebi, near sea level, 39°03'W, 16°00'S, high evergreen restinga forest, low restinga and damp open areas on white sand, 24 Mar 1974, Harley et al. 17362 (holotype, CEPEC; isotypes, K, MO). +NY!

Endemic to the restingas of the south central coast of Bahia in the Ilheus region.

Additional collections examined: BRAZIL: Bahia: Rod. Sta. Luzia-Canavieiras, restinga, 3 Nov 1971, R. Pinheiro 1697 (CEPEC); Municipio Ilhéus, Fazenda Guanabara, ramal com entrada no km 10 de Rod. Pontal-Oliveira, 30-40 m, solo arenoso, 16 Oct 1980, L. Mattos Silva et al. 1198 (CEPEC, MO); Municipio Ilhéus, Fazenda Barra do Manguinho, ramal com entrada no km. 12 da Rodovia Pontal-Oliveira, área de Piaçava, 50 m alt., capoeira, solo arenoso, 25 Sep 1980, L. Mattos Silva et al. 1069 (CEPEC; MO).

This species has the largest leaflets of any *Jacaranda*. It is closely related to *J. obovata* which grows in the same coastal restingas, though usually in wetter places. That species differs in uniformly bipinnate leaves with smaller leaflets, truncate to irregularly labiate calyx, and larger, many-flowered inflorescence. Apparently *J. grandifoliolata* is always less than 3 m high while *J. obovata* is 3-10 m tall; the data on one sterile collection (from a small shrub) of *J. grandifoliolata* indicates that the species grows to 15 m but I suspect that the observation reflects a confusion of the two species. While it is possible that *J. grandifoliolata* is a juvenile form of *J. obovata*, the available collections are very uniform and strikingly different in their much larger leaflets and simply pinnate leaves at maturity.

JACARANDA MORII A. Gentry, sp. nov.

Frutex 2 m altus, ramulis puberulis. Folia bipinnata, pinnis 11-13, foliolis in quoque pinna 17-25, anguste ovatis, coriaceis, valde bullatis. Inflorescentia floribus in panícula terminali dispositis. Calyx tubulo-campanulatus, 2-3-labiatus, puberulus; corolla purpurea, campanulata, extus glandulis stipitatis obsita; stamina didynamus, thecis duabus. Capsula ignota.

Treelet 2 m tall and 4 cm in diameter; branchlets sub-hexagonal, puberulous, with narrow paler lenticels. Leaves bipinnate with mostly 11 to 13 pinnae, each with ca. 17 to 25 leaflets sessile, narrowly ovate, more or less acute at apex, truncate or subcordate at base, 1.2-3 cm long, 0.5-1.2 cm wide, coriaceous, strongly and intricately bullate, the entire margin involute, densely puberulous above and below, drying dark olive above and light grayish below. Inflorescence terminal, paniculate, puberulous. Flowers with the calyx tubular-campanulate, irregularly 2-3-labiate, 10-12 mm long, 7 mm wide, puberulous. Corolla purple, tubular-campanulate, 3.7-5.5 cm long, 0.9-1.5 cm wide at mouth of tube, the tube 3.3-4 cm long, the lobes 0.5 cm long, stalked glandular lepidote outside, the lobes ciliate and shortly puberulous near margins. Stamens didynamous, the anthers 2-thecate, the thecae divaricate 2 mm long, the staminode 4 cm long with a glandular pubescent capitate tip; pistil not seen. Fruit unknown.

Type: BRAZIL: Bahia: Municipio de Andaraí, Novo Rodovia Andaraí-Mucugê, 15-20 km S de Andaraí, mata de cipó, 800 m, 21 Dec 1979, S. Mori and Benton 13114 (holotype, CEPEC; isotype, MO).

This species is similar to J. jasminoides (Thunb.) Sandw. and J. pulcherrima Morawetz in its flowers and to J. praetermissa Sandw. in its leaves. Jacaranda jasminoides has usually much larger leaflets which are similarly pubescent but not bullate and cuneate or rounded at the base. Jacaranda pulcherrima, of São Paulo, Minas Gerais, and Rio de Janeiro states, has similarly pubescent somewhat less bullate leaflets which differ in being basally cuneate. Jacaranda praetermissa has leaves very similar to those of J. morii (though with generally less acute leaflets) but a completely different flower with monothebate anthers and the 5-lobed calyx split clear to its base. I have seen no material of the recently described Jacaranda gomesiana Rizz. (Rodriguesia 28: 168. 1976) but from the description it is almost certainly synonymous with J. praetermissa.